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(56) Documents cited GBA 2052455 GB 1376775 GB 1153063 GB 0474880 USA 4258529 USA 2387439
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(54) A peelable closure for a container

(57) A closure assembly 10 for a container body 18 comprising an overcap ring R and an integral, peelable laminated structure 12 consisting of a paperboard substrate 16, an electrically conductive layer 20, a first coating layer 22, and a second coating layer 24, the overcap ring being injection moulded to the laminated structure. The overcap ring with the laminated structure is adapted to be induction heat sealed to the container body.

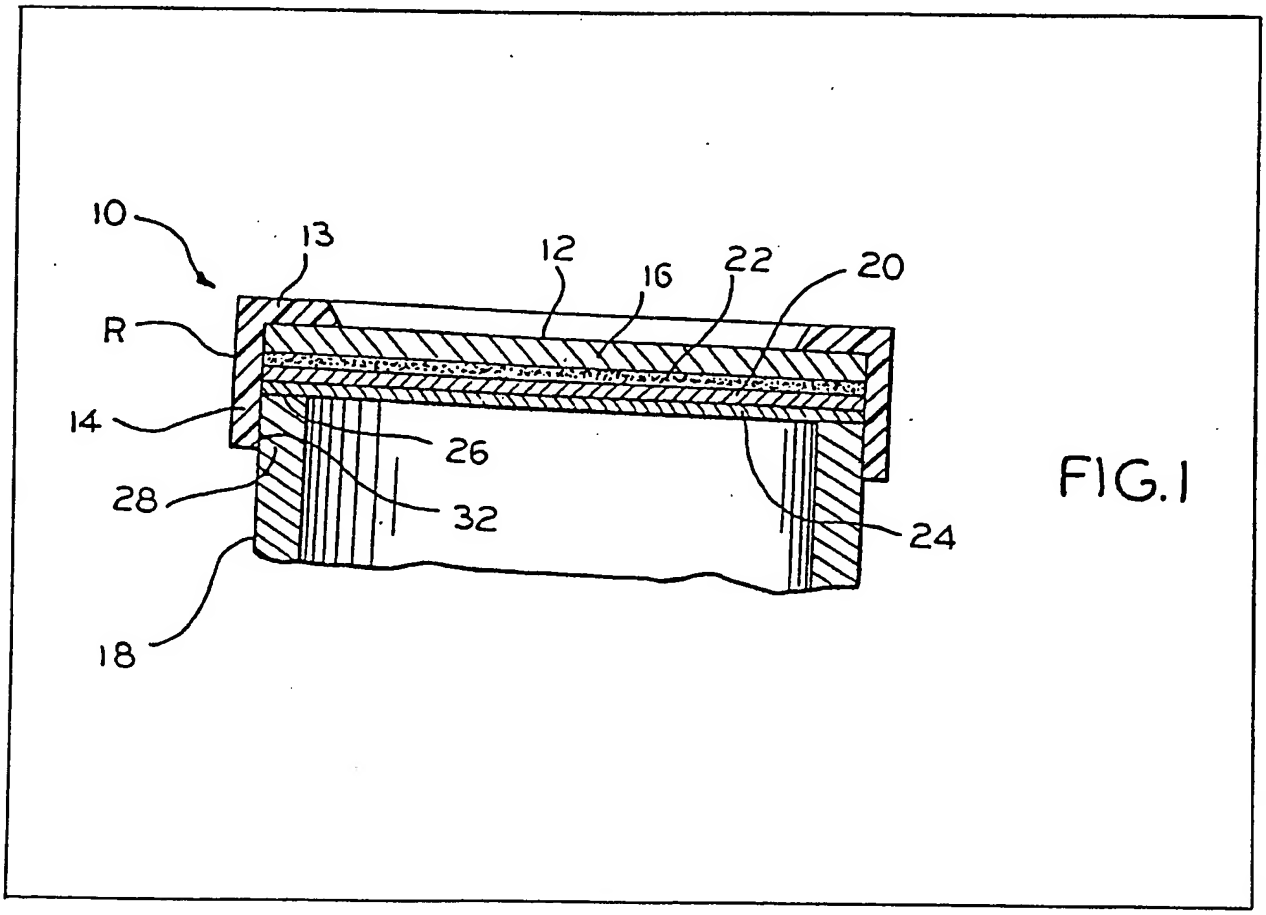

FIG.1

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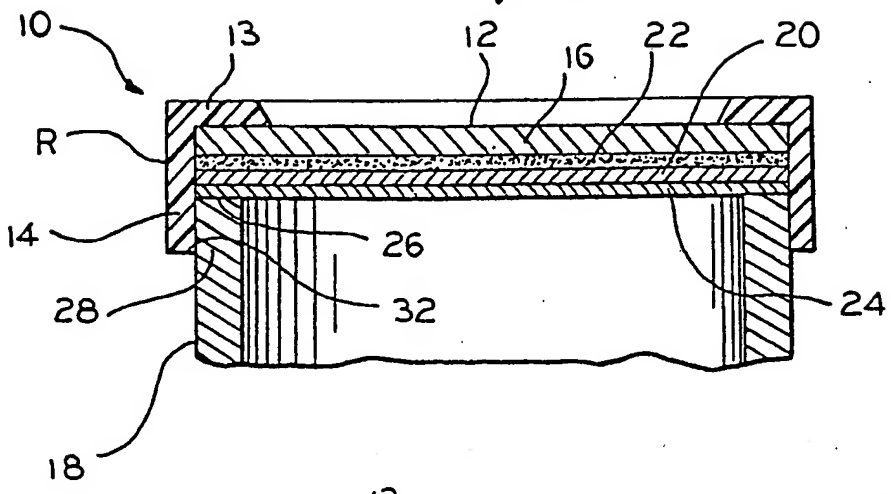

FIG.1

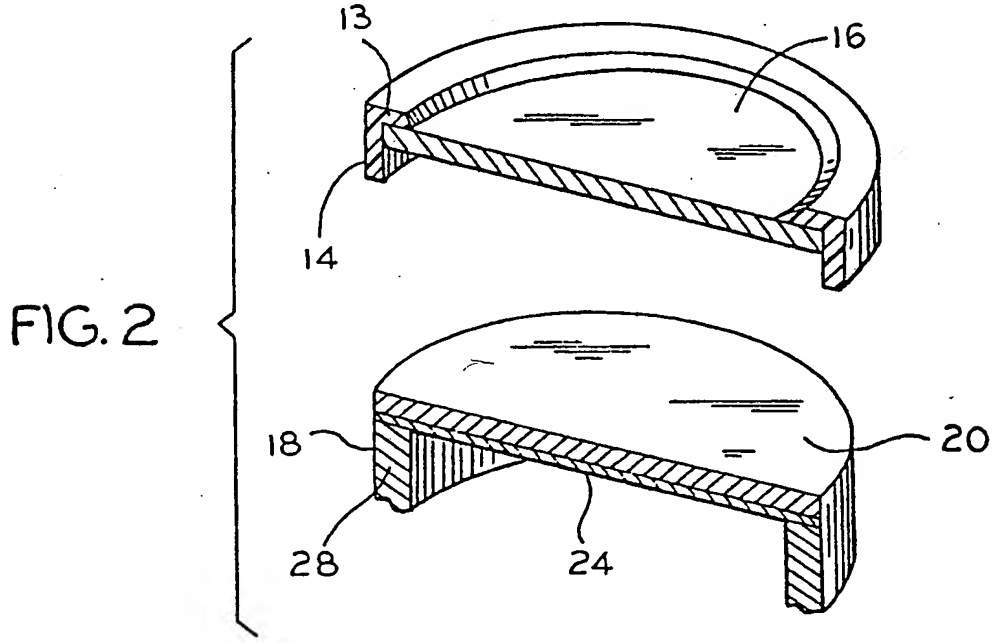

FIG. 2

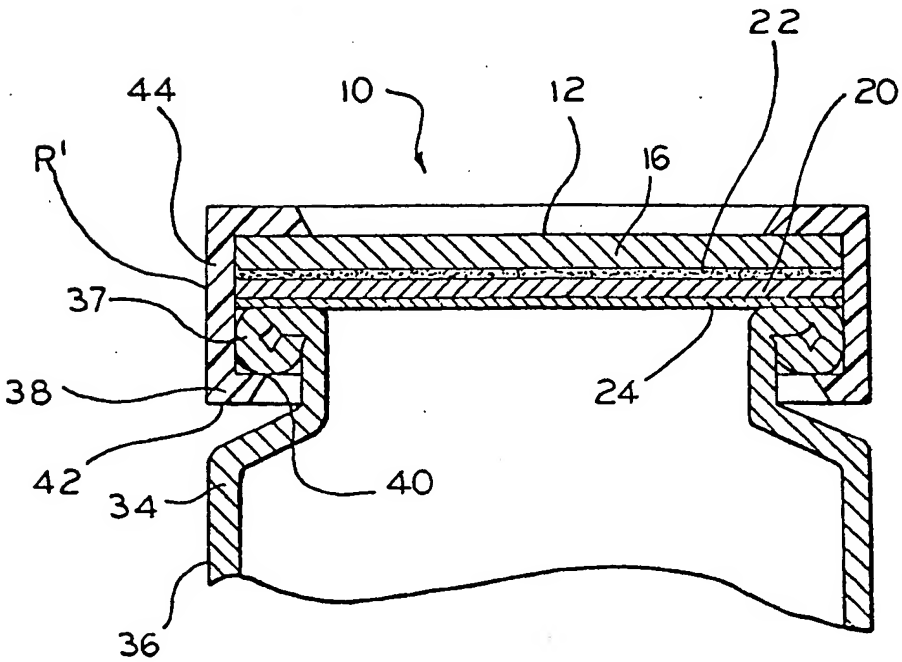

FIG.3

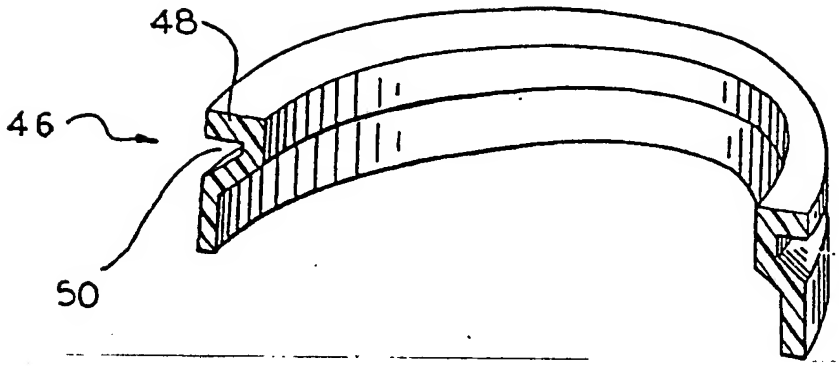

FIG.4

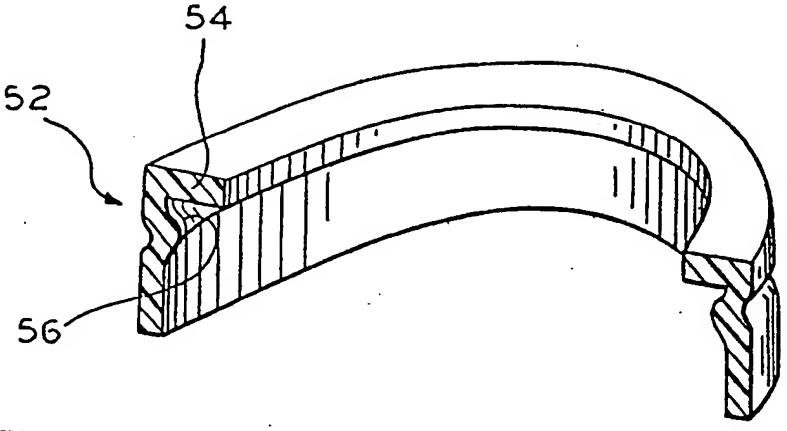

FIG.5

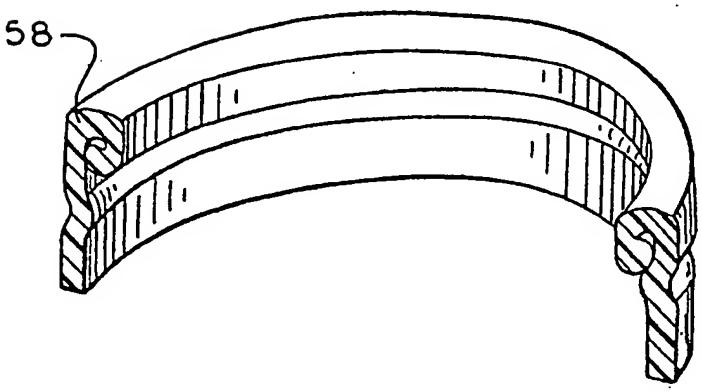

FIG.6

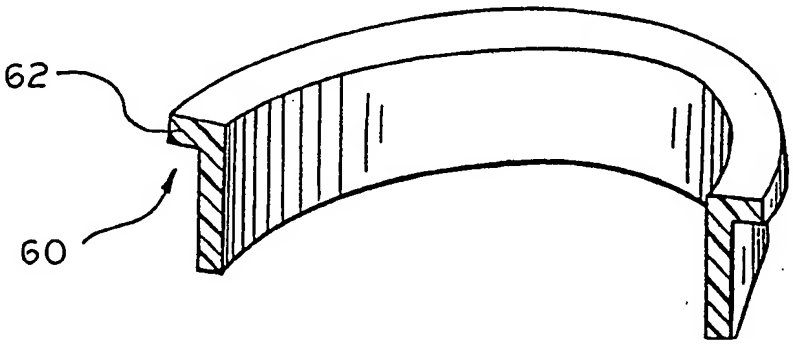

FIG.7

SPECIFICATION

A peelable closure for a container

This invention relates generally to closures and more particularly peelable closures incorporating a laminated structure.

According to the present invention there is provided a closure for a container comprising an overcap ring for engagement with a margin of a container defining an opening the ring including a generally planar portion and a flange position, and a laminated structure comprising a paperboard layer having an undersurface directed in the direction in which the flange extends from the planar portion of the ring, an electrically conductive layer having first and second surfaces, a first coating layer having first and second surfaces, the first surface thereof being bonded to the first surface of said conductive layer, and the second surface thereof being bonded to the undersurface of said paperboard layer, and a second coating layer having first and second surfaces, the first surface thereof being bonded to said second surface of said conductive layer, said overcap ring being injection moulded to said laminated structure to provide an integral peelable laminated structure, and engagement means being provided to maintain said overcap ring in sealing engagement with the container body.

In order that the invention may be well understood there will now be described some embodiments thereof given by way of example only, reference being made to the accompanying drawings wherein:

Figure 1 is a cross-sectional view of a first embodiment of closure assembly in position on a container;

Figure 2 is a cross-sectional view of a closure assembly separated from a container;

Figure 3 is a cross-sectional view of another closure assembly secured to another type of container; and

Figure 4 to 7 are alternative forms of container rim configuration.

Referring now in detail to the drawings, there is shown in Figure 1 a closure assembly 10 comprising an overcap ring R and an integral peelable laminated structure 12. The overcap ring R includes a generally planar portion 13 and a downwardly depending flange portion 14 adapted to fit around the outside of a container body 18. The overcap ring R and the laminated structure 12 are made to be a finished single-piece moulded closure by insert injection moulding. The closure 10 is adapted to be induction heat sealed to the container body 18. While the closure 10 and container body 18 are illustrated as circular in shape, it should be understood that other shapes such as oval or generally rectangular are possible.

The laminated structure 12 comprises a paperboard primary layer 16 and an electrically conductive layer such as a metal foil disc 20 having first and second surfaces. The foil disc 20 has a first coating layer 22 on the first surface thereof which facilitates bonding to the undersurface of the paperboard layer 16. The first surface of the coating layer 22 is bonded to the first surface of the foil disc 20, and the second surface of the coating layer 22 is the one bonded to the undersurface of the layer 16. The foil disc 20 also has a second coating layer 24 on the second surface thereof which will become sealed to the mouth open end of the container body 18 at its rim 26. The first surface of the coating layer 24 is bonded to the second surface of the foil disc 20, and the second surface of the coating layer 24 is adapted for heat sealing to the rim 26.

The first coating layer 22 may be either a weak adhesive or a tacky wax film which depends on whether the foil disc 20 is to be removed from the container with the overcap ring or whether it is to remain on the container when the overcap ring is removed. The second coating layer 24 is a heat sealing material which may be either a releasable type or peelable, low density polyethylene. The selection of the material for use in the coating layer 24 is dependent upon the material of the container and whether the coating layer 24 is to remain inside the overcap ring or to remain on the container when the overcap ring is removed.

As is illustrated in Figures 1 and 2, the upper marginal portion of the cylindrical container body 18 includes a sidewall 28 and the rim 26. The container sidewall 28 may be formed of paperboard, metal, glass, plastic or any other suitable material. The downwardly depending flange portion 14 of the overcap ring R has an inner surface which is adapted for frictional engagement with the outer surface area 32 of the upper marginal portion of the container body 28 adjacent the rim 26. The depending flange portion 14 and the outer surface area 32 define interlocking engagement means for retaining in place the overcap ring R to the container body 18 for re-use purposes. The overcap ring may be formed of a high or low density polyethylene, polypropylene, or other resilient plastic material which can be injected moulded with the laminated structure.

In another embodiment as is shown in Figure 3, a sidewall 34 of a container body 36 is provided at its upper marginal portion with an outwardly rolled rim 37 projecting radially outwardly from the sidewall 34.

Further, the overcap ring R includes an annular lip 38 with an upper edge 40 and a lower inner edge 42. The annular lip 38 is formed integrally with a depending flange portion 44 and projects radially inwardly. This interlocking may be as described in U.S. Serial No. 416949 where the upper inner edge of an inwardly directed lip is made sharp, i.e. the angle between the lip upper face and inner face is acute, and the inner face of the lip is rounded or chamfered to incline outwardly and downwardly from the inner edge. This gives the lip facility of deflecting and more firmly engage the bead or rim of the container where the lid comes under increasing internal pressure in the sealed container. The container bead or rim may be engaged on its surface by the

sharp edge so that as the lip deflects, that edge will bite into the surface of the rim.

While the upper marginal portion of the cylindrical container body 18 has a straight walled rim 26 as shown in Figure 1 and the upper marginal portion of the cylindrical container body 36 has an outwardly rolled rim 37 as shown in Figure 3, it should be understood that the rim configuration could be formed in the manner illustrated in Figures 4 to 7. In Figure 4, the rim 46 is formed to have a radially outwardly extending portion 48 with a recess 50. In Figure 5, the rim 52 has a radially inwardly extending portion 54 with a recess 56. In Figure 6, the rim 58 is formed to be rolled inwardly. In Figure 7, the rim 60 has a radially outwardly extending portion 62.

As should be clearly understood from Figures 1 and 3, the single-piece closure 10 is formed to be an overcap ring with an integral, peelable laminated structure by the process of insert injection moulding. Subsequent thereto, the closure 10 is positioned on the mouth opening end of the container body for induction heat sealing of the distal portion of the second surface of the coating layer 24 to the container rim. In order to open such a sealed container, the overcap ring is removed by resiliently releasing the flange portion from the container rim and lifting of the overcap ring upwardly. Removal of the overcap ring may cause the laminated structure 12 or a portion thereof to be separated from the container rim dependent upon the relative thickness and type of materials used in forming the laminated structure.

In one embodiment, the coating layer 22 is a tacky wax film and the coating layer 24 is a releasable, heat sealing material. In this embodiment, lifting of the overcap ring from the container body breaks a weak bonding between the coating layer 24 and the container rim so that the entire laminated structure 12 is peeled off from the container rim leaving no residue thereon and remains completely inside the overcap ring. For reuse purposes, the overcap ring may be then reapplied over the mouth opening end of the container to protect the partially depleted contents thereof.

In another embodiment, the coating layer 22 is a weak adhesive and the coating layer 24 is a releasable, heat sealing material. In this second embodiment as is shown in Figure 2, the electrically conductive layer 20 and the coating layer 24 of the laminated structure 12 remain adhered to top of the container rim 26 upon removal of the overcap ring R. This is because of the bonding strength between the first surface of the foil 20 and the coating 22 is weaker than the bonding strength between the coating layer 24 and the container rim 26.

In still another embodiment, the coating layer 22 is a non-peelable adhesive and the coating layer 24 is a peelably attached film. In this third embodiment, only the coating layer 24 of the laminate structure 12 remains upon the top of the container rim upon removal of the overcap ring. This is due to the fact that the bonding strength between the coating layer 24 and the second surface of the foil 20 is made to be weaker than the bonding strength between the coating layer 24 and the container rim.

From the foregoing detailed description, it can be seen that the embodiments described provide a new and improved overcap ring with an integral peelable laminated structure which is formed by insert injection moulding and is readily adapted to induction heat sealing to a container. Further, the entire laminated structure or a portion thereof may become separated from the container rim upon removal of the overcap ring.

CLAIMS

1. A closure for a container comprising an overcap ring for engagement with a margin of a container defining an opening the ring including a generally planar portion and a flange portion, and a laminated structure comprising a paperboard layer having an undersurface directed in the direction in which the flange extends from the planar portion of the ring, an electrically conductive layer having first and second surfaces, a first coating layer having first and second surfaces, the first surface thereof being bonded to the first surface of said conductive layer, and the second surface thereof being bonded to the undersurface of said paperboard layer, and a second coating layer having first and second surfaces, the first surface thereof being bonded to said second surface of said conductive layer, said overcap ring being injection moulded to said laminated structure to provide an integral peelable laminated structure, and engagement means being provided to maintain said overcap ring in sealing engagement with the container body.

2. A closure as claimed in Claim 1, wherein said electrically conductive layer comprises a metal foil disc.

3. A closure as claimed in either of the preceding Claims, wherein said first coating layer is a tacky wax and said second coating layer is a releasable heat sealing material.

4. A closure as claimed in either of Claims 1 and 2, wherein said first coating layer is a weak adhesive and said second coating layer is a releasable heat sealing material.

5. A closure as claimed in either of Claims 1 and 2, wherein said first coating is a non-peelable adhesive and said second coating layer is a peelably, attached film.

6. A closure as claimed in any of the preceding Claims wherein said upper, open marginal portion of said container body has a radially outwardly extending surface and the engagement means comprise a radially inwardly directed lip to engage behind said surface.

7. A closure as claimed in any of Claims 1 to 5 positioned in a container, with engagement means being formed by the flange making frictional engagement with the container.

8. A closure substantially as herein described with reference to the accompanying drawings.

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